

¹⁹⁷At α decay (381 ms) [1999Sm07](#),[1986Co12](#),[2014Ka23](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia		NDS 143, 1 (2017)	31-Mar-2017

Parent: ¹⁹⁷At: E=0.0; J ^{π} =(9/2⁻); T_{1/2}=381 ms 6; Q(α)=7104 3; % α decay=96.1 12

¹⁹⁷At-Q(α): From [2017Wa10](#).

¹⁹⁷At-T_{1/2}: Weighted average of 388 ms 6 ([1999Sm07](#)), 354 ms +17-15 ([2014Ka23](#)), 400 ms 100 ([1967Tr06](#)), 350 ms 40 ([1986Co12](#)), 390 ms 16 ([2005De01](#)), 340 ms 20 ([2005Uu02](#)), and 370 ms +90-60 ([1996En01](#)).

¹⁹⁷At-% α decay: From ¹⁹⁷At Adopted Levels.

[1999Sm07](#): ¹⁹⁷At produced from ¹⁶⁵Ho(³⁶Ar,4n), E=178 MeV; Recoiling fusion-evaporation products were magnetically separated in-flight from the primary beam and fission products using the RITU gas-filled recoil separator. The recoils were implanted into a 16-strip Si detector, three Clover-type Ge detectors for prompt γ -ray and another four Ge detectors for delayed γ ray detection. Measured E γ , E α , and half life using recoil-decay-tagging technique.

Sources from ^{185,187}Re(²⁰Ne,xn) (E(²⁰Ne)=100-200 MeV ([1967Tr06](#)), E(²⁰Ne) \leq 240 MeV ([1986Co12](#))); helium-jet transport; measured E α , I α (silicon surface-barrier detectors).

[2014Ka23](#): ¹⁹⁷At obtained from ²⁰¹Fr decay. ²⁰¹Fr produced in ¹⁴⁹Sm(⁵⁶Fe,p3n), E=275 MeV; Target=370 μ g/cm² thick enriched to 96.9% in ¹⁴⁹Sm. Evaporation residues were separated using SHIP facility at GSI, and implanted into the detection system consisting of 16-strip position sensitive Si detectors (PSSD), a pack of six Si strip detectors (BOX) at the back to detect escaping α particles, and three time-of-flight detectors in front of PSSDs. Measured position and time correlations between evaporation residues (Er) and α events, E α , half-lives of ground states and isomers of ²⁰¹Fr and ¹⁹⁷At, Er- α - α correlations.

¹⁹³Bi Levels

E(level)	J ^{π}	T _{1/2}	Comments
0.0	(9/2 ⁻)	63.6 s 30	J ^{π} ,T _{1/2} : From Adopted Levels.

α radiations

E α	E(level)	I α [†]	HF	Comments
6960 3	0.0	100	1.6	HF: Using r ₀ (¹⁹³ Bi)=1.529, average of r ₀ (¹⁹² Pb)=1.506 6 and r ₀ (¹⁹⁴ Po)=1.551 10 (1998Ak04). 1999Sm07 calculated a HF=0.95 11, assuming I(α)=100%. E α : Weighted average of 6957 5 (1967Tr06), 6960 5 (1999Sm07), 6959 6 (2005Uu02), and 6963 5 (2014Ka23). Reduced α width δ_α^2 =57 keV +4-3 (2014Ka23).

[†] For absolute intensity per 100 decays, multiply by 0.961 12.